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Jones et al.

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- (54) **PLAYBACK DEVICE HAVING TEXT DISPLAY AND COMMUNICATION WITH REMOTE DATABASE OF TITLES**
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(56) **References Cited**

U.S. PATENT DOCUMENTS

- | | | | |
|-------------|---------|----------------------|--------|
| 5,113,383 | 5/1992 | Amemiya et al. . | |
| 5,132,949 | 7/1992 | Choi . | |
| 5,157,614 | 10/1992 | Kashiwazaki et al. . | |
| 5,157,646 | 10/1992 | Amemiya et al. . | |
| 5,263,010 | 11/1993 | Amemiya et al. . | |
| 5,341,350 * | 8/1994 | Frank et al. | 369/30 |
| 5,392,264 | 2/1995 | Hira . | |
| 5,446,714 | 8/1995 | Yoshino et al. . | |
| 5,463,605 | 10/1995 | Nishida et al. . | |
| 5,464,946 | 11/1995 | Lewis . | |
| 5,475,835 | 12/1995 | Hickey . | |
| 5,559,764 | 9/1996 | Chen et al. . | |
| 5,615,345 | 3/1997 | Wanger . | |
| 5,625,608 | 4/1997 | Grewe et al. . | |
| 5,642,337 * | 6/1997 | Oskay et al. | 369/30 |
| 5,679,911 | 10/1997 | Moriyama et al. . | |
| 5,680,379 | 10/1997 | Ishida et al. . | |

- | | | | |
|-------------|---------|------------------------|--------|
| 5,689,484 | 11/1997 | Hirasawa . | |
| 5,691,964 * | 11/1997 | Niederlein et al. | 369/30 |
| 5,701,385 | 12/1997 | Katsuyama et al. . | |
| 5,726,957 | 3/1998 | Hisamatsu et al. . | |
| 5,740,304 | 4/1998 | Katsuyama et al. . | |
| 5,751,672 | 5/1998 | Yankowski . | |
| 5,757,739 | 5/1998 | Heath et al. . | |
| 5,768,222 | 6/1998 | Hisamatsu et al. . | |
| 5,774,431 | 6/1998 | Bos et al. . | |
| 5,781,889 * | 7/1998 | Martin et al. | 705/1 |
| 5,793,726 | 8/1998 | Nagano . | |
| 5,815,471 | 9/1998 | Mince et al. . | |
| 5,822,283 | 10/1998 | Bos et al. . | |
| 5,959,944 * | 9/1999 | Dockes et al. | 369/30 |
| 5,959,945 * | 9/1999 | Kleiman | 369/30 |
| 6,011,758 * | 1/2000 | Dockes et al. | 369/30 |
| 6,031,795 | 2/2000 | Wehmeyer . | |
| 6,034,925 | 3/2000 | Wehmeyer . | |

FOREIGN PATENT DOCUMENTS

- 10-171818 * 6/1998 (JP) 369/30

* cited by examiner

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(57) **ABSTRACT**

A low-cost library management solution for consumer music selection systems. A multiple CD changer includes non-volatile storage for textual title and track information about the CDs in the changer. Also included is a communication device that communicates with a remote database to obtain the textual information. Instead of using a modem or an ISDN terminal adapter, the communication device uses a DTMF generator/detector to communicate with a front-end processor of the remote database using DTMF signals, or uses a conventional serial or parallel interface to communicate with an external device connected to the Internet that transmits queries formulated by the changer to the remote database and provides the response to the changer.

7 Claims, 4 Drawing Sheets

